Province of British Columbia
Ministry of Energy, Mines
and Petroleum Resources
Hon. Jack Davis, Minister

MINERAL RESOURCES DIVISION
Geological Survey Branch

MINES IN THE MAKING - NORTHWESTERN BRITISH COLUMBIA

By D. Lefebure and M.L. Malott

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A Review of 1989 Exploration and Mining
Activity in Northwestern British Columbia

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MINES IN THE MAKING - NORTHWESTERN BRITISH COLUMBIA

A Review of 1989 Exploration and Mining Activity in Northwestern British Columbia

INTRODUCTION

In northwestern British Columbia four new gold mines opened in 1989. The Lawyers (Cheni) mine in the Toodoggone went into production late in 1988 and became fully operational in January 1989. A small open-pit mining operation was started on the Shasta property and the ore trucked to the mill at the old Baker mine. In the Stewart area the Premier mine started up in May processing ore from the Big Missouri and Silbak Premier open pits. At the Golden Bear property mining started in the open pit in the summer and underground in the fall. The ore was stockpiled for winter milling.

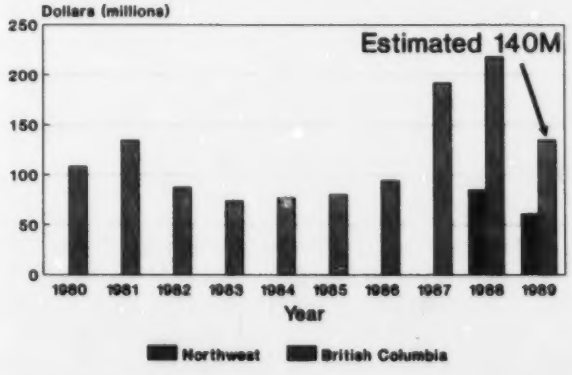
The Johnny Mountain, Bell, Equity Silver and Endako mines continued normal operations throughout the year. Cassiar Asbestos Corporation halted open-pit mining at the beginning of June, due to limited asbestos reserves and the possibility of a pit-wall failure. The Erickson mine remained closed; drifting in the adit being driven to access the Michelle zone was stopped roughly one kilometre short of its target.

Currently under development, the McDame asbestos deposit in Cassiar should start producing asbestos fibre in April or May, 1990. At the end of the year the Sulphurets and Snip projects were at very advanced exploration stages with production decisions a possibility in 1990.

Exploration activity in the Northwestern District slowed from the record levels of 1987 and 1988, primarily due to difficulties in raising risk capital and falling gold prices. Expenditures for the Northwest were in excess of $61 million for the 68 major exploration projects, down $24 million from 1988. Over forty per cent of the 1989 exploration expenditures for British Columbia are estimated to have been spent in the Northwest (Figure 1). The Stewart - Iskut River gold belt continued to be the busiest exploration and development area in the district, with expenditures in excess of $27 million on 17 major projects, including the Eskay Creek deposit.

An increase in the number of Notices of Work submitted to the government (Figure 2) was due in part to a resurgence of reconnaissance prospecting programs throughout the district, particularly in the region extending from north of the Iskut River to the Tatsamenie Lake area. Several companies also showed renewed interest in the Kitsault Valley area. These two areas are underlain by rocks of the Stikine Terrane which also hosts the numerous gold deposits of the Iskut River - Stewart gold belt. Exploration companies examined a broader variety of mineral deposits in 1989 than in previous years, with veins, skarns, porphyries and volcanogenic massive sulphides the most frequent targets.

MINERAL EXPLORATION EXPENDITURES



Figures for entire province provided by B.C. and Yukon Chamber of Mines

Figure 1

MINERAL NOTICES OF WORK
Northwestern British Columbia

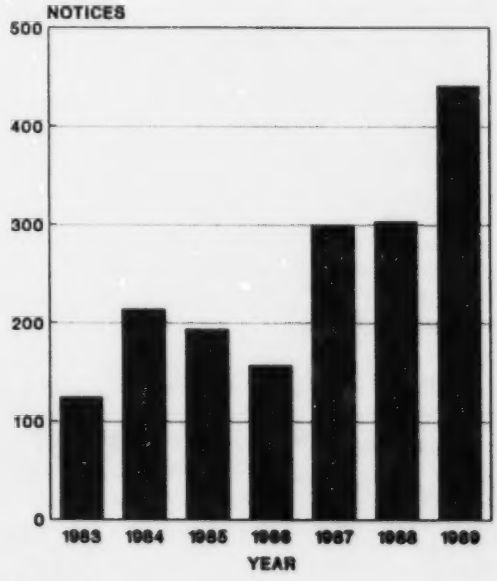


Figure 2

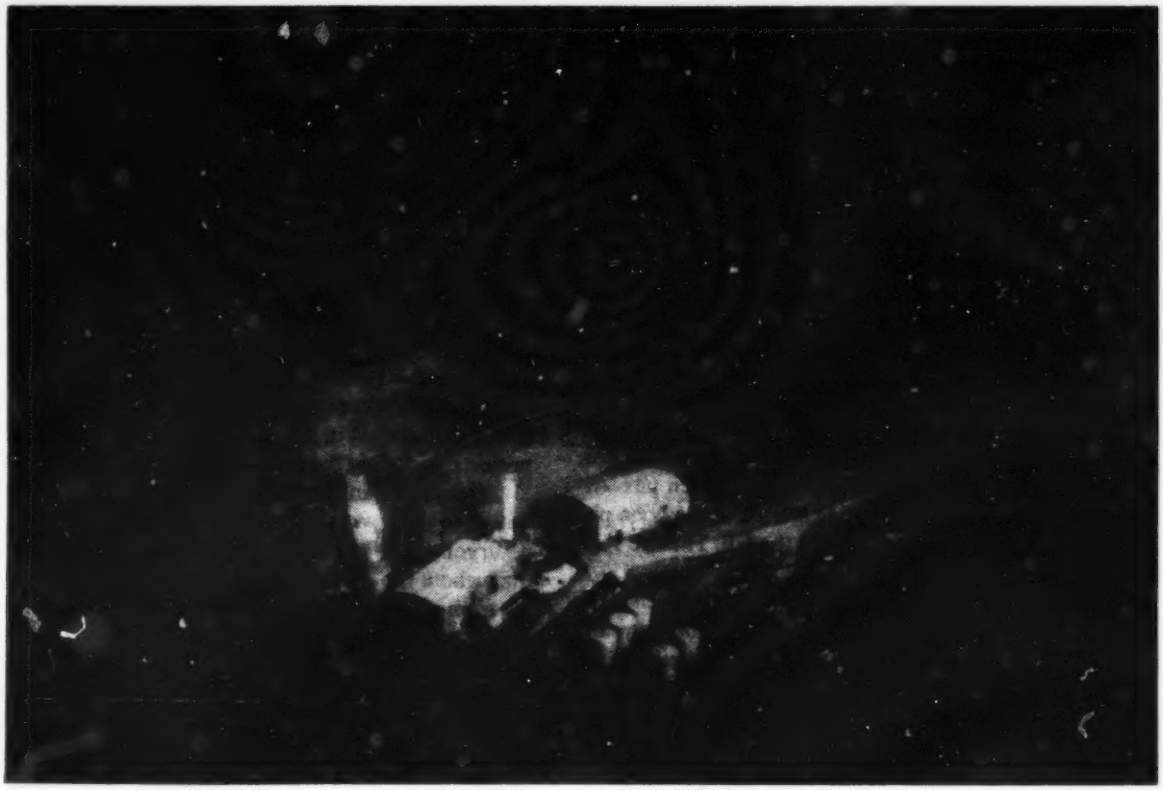


Plate 1. LAWYERS MINE (46) - Lawyers is one of the four new gold mines in northwestern British Columbia. This view shows the Cheni Gold Mines Ltd. mill and office buildings.

Coal exploration was limited to only one program on the North zone of the Telkwa property as Crows Nest Resources Limited prepared to submit a Stage 2 report in early 1990. The number of placer mining operations in the district declined 15 per cent from 1988. Queenstake Resources Ltd. produced a total of 377 kilograms of fine gold from two large operations in the Atlin area.

HIGHLIGHTS

- Intense exploration activity continued on the **Windy Craggy deposit** (1) with expenditures of $14.1 million
- Deep drilling on the **Tulsequah Chief property** (4) identified a new sulphide lens and increased ore reserves.
- At **Golden Bear** (71) construction and mine development was completed with open-pit and underground mining starting in the summer and fall, respectively.
- Underground development continued at the **McDame asbestos deposit** (8) with production planned for 1990.
- After 26 years of operation, the **Cassiar Asbestos** open pit (72) halted production in June. Ore stockpiles will feed the mill until the McDame deposit is developed.
- Underground exploration continued at the **Snip project** (17); no production decision has been announced.
- On the **Eskay Creek property** (21) the 21-zone has been traced along a strike length of 1300 metres and down dip 240 metres.
- The **Kerr porphyry copper-gold deposit** (25) reserves were doubled and the property was sold to Placer Dome Inc.
- The West, UTC and newly discovered R-8 Zones continued to be the focus of underground development on the **Sulphurets property** (24).
- Open pit mining started at the **Silbak Premier** (31) and **Big Missouri silver-gold deposits** (28).
- On the **Silver Butte property** (29) underground drilling delineated reserves on the Facecut 35 zone of 105 590 tonnes with cut grades of 10.6 grams gold and 39.7 grams silver per tonne.
- Bond Gold intersected gold mineralization in drilling at **Red Mountain** (32) and **Willoughby Creek** (33).
- The **Lawyers mine** (46) overcame initial start-up problems and the mill operated at the planned 460 tonnes per day.

- Crows Nest Resources Ltd. announced new plans to mine the **Telkwa coal deposit** (59); this time focusing on the North zone.

TRENDS AND OPPORTUNITIES

Exploration activity in the Northwestern District slowed from the record levels of 1987 and 1988, primarily due to difficulties in raising risk capital and falling gold prices. Numerous projects suffered from a late start (July or August) on fieldwork; some companies proposed major exploration programs only to be limited by funding to surface sampling and mapping. Major companies, such as Cominco Ltd., Placer Dome Inc. and Homestake Mineral Development Company, played a more active role in the Northwestern District than in recent years.

Exploration expenditures were most significant in known mining camps such as Stewart, Iskut River, Tulsequah, Toodoggone and Smithers (Figure 3) or potential mining camps such as the Windy Craggy and Sulphurets areas (Figure 4). However, exploration programs were more widespread than in 1987 or 1988 reflecting a greater willingness to explore on "grass roots" properties. In the region extending from north of the Iskut River to the Tatsamenie Lake area there were a large number of preliminary programs and for the first time in several years, several companies completed major exploration programs in the Kitsault Valley area.

The exciting drill intersections on the Eskay Creek property produced a late summer rush by a number of companies to explore for similar deposits in the general Sulphurets area. Much of the industry activity focused on a mineralized felsic volcaniclastic horizon identified by D. Alldrick and J. Britton of the British Columbia Geological Survey Branch during their mapping in 1988.

Areas with excellent exploration potential are still open for staking throughout the district. Some of the most attractive exploration targets are the porphyry copper-gold deposits within the Stikine Terrane. Examples of known deposits are the Bell orebody on Babine Lake and the Galore Creek deposit located south of Telegraph Creek. The Stikine Terrane north and west of the Bowser Basin is particularly prospective for these deposits. The Babine area also has considerable potential, although in low-lying areas thick overburden increases the difficulty of exploration.

Recent exploration results at Windy Craggy and the Tulsequah Chief mine, as well as the new Greens Creek

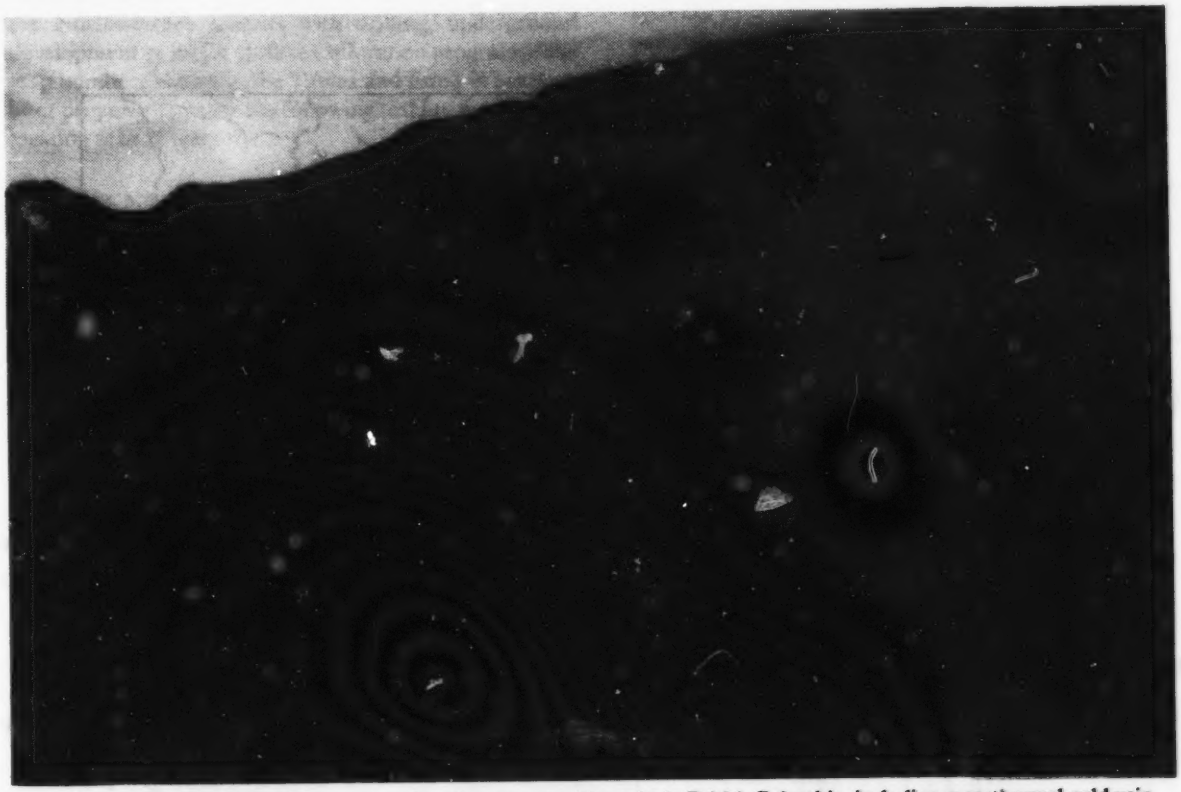


Plate 2. SURF INLET - Numerous exploration opportunities exist in British Columbia, including mesothermal gold vein targets on the North Coast. The Surf Inlet and Pugsley mines, located in the valley (centre of the photograph), produced more than 890 000 tonnes grading 13.4 grams per tonne between 1917-1926 and 1936-1942.

FIGURE 3

MINING CAMPS OF N.W. BRITISH COLUMBIA

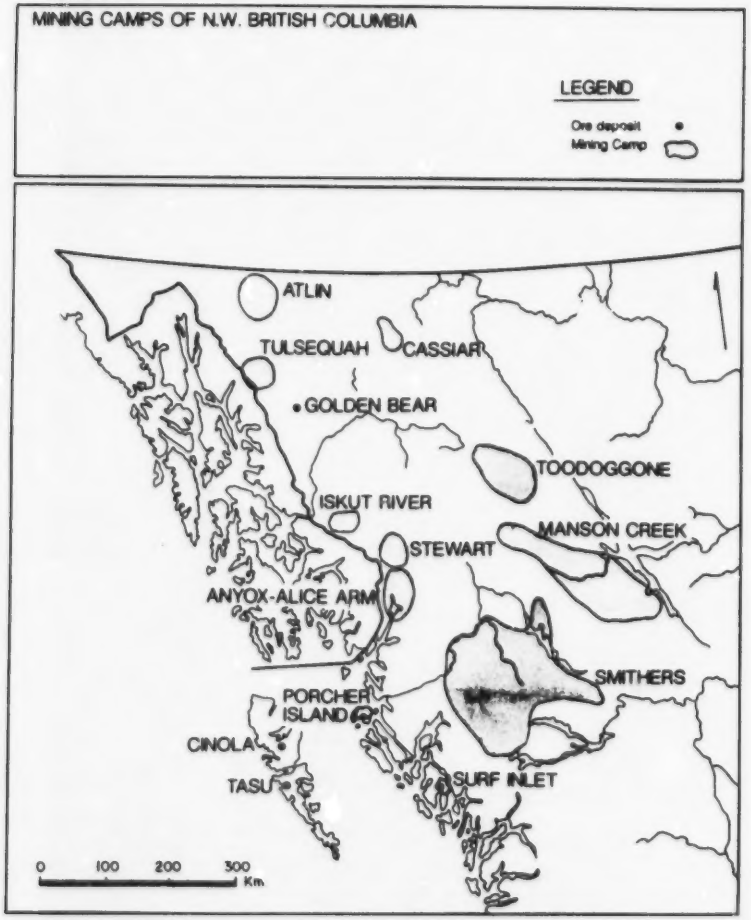
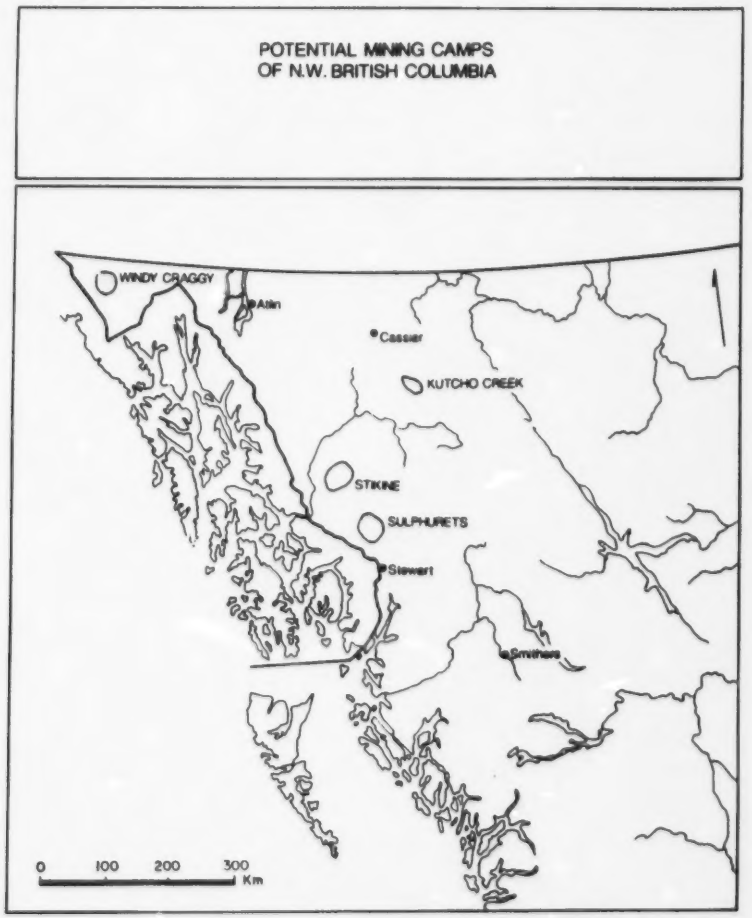


FIGURE 4

POTENTIAL MINING CAMPS OF N.W. BRITISH COLUMBIA



mine in Alaska, have generated more interest in volcanogenic massive sulphide deposits. There is still considerable open ground in areas with massive sulphide potential including the Tatshenshini River, Cry Lake and Prince Rupert areas.

The North Coast was one of the quietist areas in the province with respect to mineral exploration. This is surprising given the presence of several past producers, including the Surf Inlet and Pugsley gold mines which jointly produced 896 647 tonnes grading 13.4 grams gold and 7.2 grams silver per tonne with 0.32 per cent copper. Gold-bearing mesothermal veins and skarns are prospective targets, particularly if regional structures and known showings are used to pinpoint areas of special interest.

MINERAL EXPLORATION

A total of 441 Notices of Work were submitted in 1989 for mineral exploration, up 53 per cent from 1988 (Figure 2). Some of these notices were to record program changes from earlier submissions. Expenditures per project varied from small amounts by individual prospectors up to $14.1 million. Ten properties are at an advanced stage (Table 1); many of these show excellent potential to become mines in the 1990's. Table 3 lists the 68 major projects in the Northwestern District with drilling, underground development or major surface exploration programs. The map numbers shown in the Tables and listed in brackets after property names in the following text are keyed to the location map (Figure 6).

TATSHENSHINI RIVER AREA

In the extreme northwestern corner of the province, Geddes Resources Ltd. spent $14.1 million on the Windy Craggy (1) volcanogenic massive sulphide deposit. Extensive underground drifting included a crosscut through the North zone which encountered 223 metres of continuous massive sulphides. Detailed underground drilling increased the confidence level of the ore reserves, currently estimated at 118.1 million tonnes of 1.9 per cent copper and 0.1 per cent cobalt. Ore quality was studied through bulk sampling followed by bench and pilot plant metallurgical tests. Engineering and environmental studies are being completed for a Stage I submission to the British Columbia Mine Development Review Committee in early 1990. Initial surveying of part of the proposed route for the 100-140 kilometre access road was completed.

The Rime (East Arm) property (2) of Bond Gold Canada Inc. is located immediately to the east of Windy Craggy. UTEM and magnetic surveys defined an anomaly 2.3 kilometres long which is believed related to massive sulphide mineralization. Drilling through the East Arm glacier in 1988 was followed up in 1989 by drilling from the valley edge.

ATLIN VICINITY

West of Tagish Lake on the Teepee property (3) Cyprus Gold (Canada) Ltd. tested five different vein systems in Proterozoic-Paleozoic metamorphic rocks paralleling and close to the Llewellyn fault. A regional mapping program led by M. Mihalynuk of the British Columbia Geological Survey Branch has identified the Llewellyn fault as a major locus for precious metal mineralization.

In the immediate Atlin area, there was no major exploration activity for Motherlode-style gold deposits, although placer operations are ongoing.

TABLE 1
ADVANCED EXPLORATION PROJECTS, NORTHWESTERN DISTRICT

	Project	Company	Ore Reserves
1	Windy Craggy	Geddes Resources Ltd.	118.8 Mt; 1.9% Cu, 0.08% Co, 0.2 g/t Au, 3.26 g/t Ag
4	Tulsequah	Cominco Ltd., Redfern Resources Ltd.	5.26 Mt; 1.6% Cu, 1.31% Pb, 7.03% Zn, 2.74 g/t Au, 100.5 g/t Ag
9	Erickson Gold	Total Energold Corporation	Erickson:18.3 kt; 14.1 g/t Au Cusac, Michelle Ext.: 25 kt; 34.29 g/t Au, 12.3 g/t Ag
21	Eskay Creek	Calpine Resources Incorporated, Consolidated Stikine Silver Ltd.	South Zone: 2.5 Mt; 7.47 g/t Au, 101.48 g/t Ag, Pb, Zn, Cu
25	Kerr	Western Canadian Mining Corp., Sulphurets Gold Corporation	114.3 Mt (drill inferred); 0.61% Cu, 0.27 g/t Au, 1.71 g/t Ag
29	Silver Butte	Tenajon Resources Corporation, Westmin Resources Limited	279.4 kt; 17.31 g/t Au 36.68 g/t Ag
	Mt Klappan	Gulf Canada Corporation	231 Mt, anthracite
57	Dome Mountain	Teeshin Resources Ltd. Canadian-United Minerals Inc.	270.9 kt; 12.17 g/t Au 36.68 g/t Ag
59	Telkwa Coal	Shell Canada Ltd.	South Telkwa: 23.4 Mt bituminous coal
62	Silver Queen	Pacific Houston Resources Inc.	1.73 Mt; 327.76 g/t Ag,6.19% Zn, 2.74 g/t Au, Ge, Cd, In, Ga, Pb, Hg

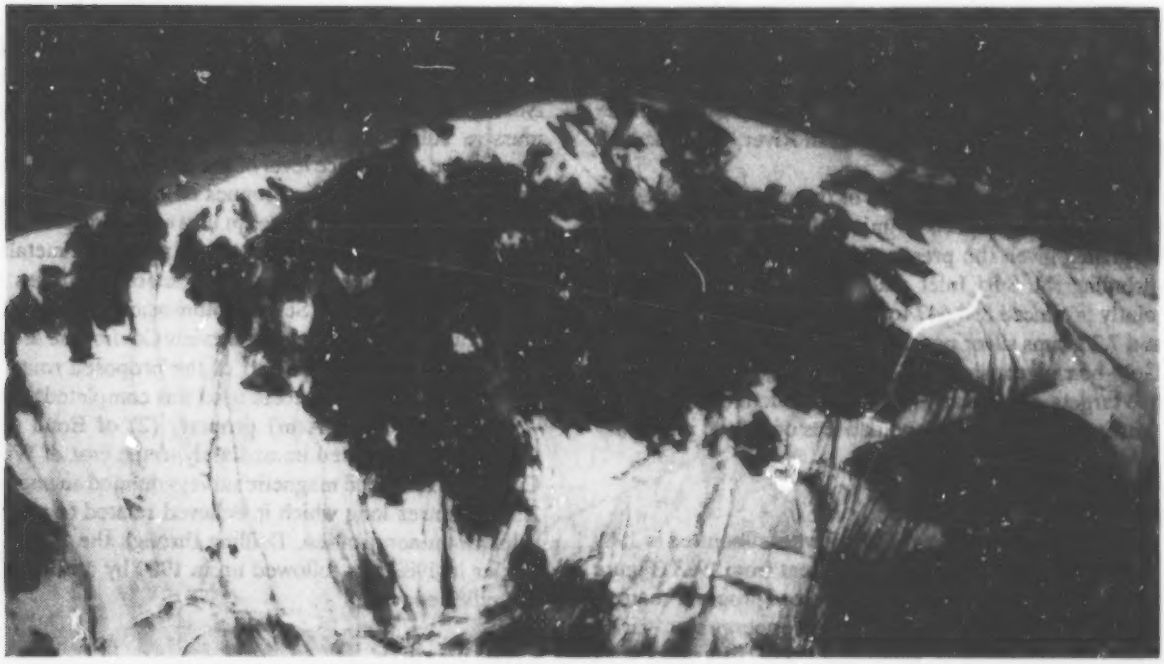


Plate 3. WINDY CRAGGY (1) - The North Zone of the copper-bearing massive sulphide deposit is exposed as rusty zones shown in this photograph of the north flank of Windy Craggy peak.

TULSEQUAH RIVER - TATSAMENIE LAKE AREA

Redfern Resources Ltd. announced that Cominco Ltd.'s underground drilling program on the Tulsequah Chief (4) delineated additional reserves bringing the total to 5.3 million tonnes of 1.6 per cent copper, 1.31 per cent lead, 7.03 per cent zinc, 2.74 grams per tonne gold and 100.46 grams per tonne silver. A sulphide lens was discovered down dip from known zones and indications are that the individual upper lenses may be coalescing at depth, into a single large zone open in all directions. Nearby, in a geologically similar setting to the Tulsequah Chief, Sunport Metals Corporation completed a drill program on the brecciated sulphide mineralization of the Banker (6). Across the Tulsequah river on the old Polaris-Taku mine site (5), Suntac Minerals Corporation drilled a number of gold-bearing mesothermal vein systems. In one hole the drilling intersected 8.5 metres (true width) grading 23.5 grams per tonne gold. Results to date suggest gold grades and widths are increasing with depth.

CASSIAR MINING CAMP

At the Erickson gold mine (9), in the Cusac area, the exploration adit being driven to access the Michelle zone was halted in the fall. The adit is 1375 metres long and approximately half-way to its target. Elsewhere on the Cusac option, limited open-pit tonnage was outlined on the Heather vein and the Bain vein was discovered. The latter was traced along strike by drilling for 200 metres with widths of 0.5 to 1.7 metres containing high gold values.

On the McDame property (8) of Cassiar Mining Corporation some drifts were rehabilitated and underground diamond drilling defined further reserves.

North of Cassiar, near the British Columbia - Yukon boundary, Strathcona Mineral Services Ltd. pumped out the workings and rehabilitated the camp at Midway (7) preparatory to a major exploration program in 1990.

DEASE LAKE - MOUNT EDZIZA AREA

On the Gnat Pass property (10) of Integrated Resources Ltd., located immediately southeast of Dease Lake, it is expected that the results of a drilling and trenching program will increase both the known tonnage and grade on this copper porphyry deposit.

To the west of Mount Edziza Park, Integrated Resources drove a number of rotary drill holes into the Barrington River placer lease (11) testing the two gold-bearing pay zones. Close to the eastern boundary of Mount Edziza Park, Cominco Ltd. drilled on the Spectrum property (12). The holes were to test strike length and down-dip extensions of previously drilled high grade gold intersections in an Upper Triassic to Lower Jurassic volcanic-sedimentary sequence which is crosscut by Jurassic to Cretaceous diorite to quartz monzonite dikes. South and east of Mount Edziza Park the Hank claims (13) of Lac Minerals Ltd. cover altered Upper

Triassic andesites cut by quartz-carbonate-barite veins. Drilling intersected several-high grade gold and silver sections with associated zinc, lead and copper mineralization.

ISKUT RIVER AREA

The Iskut River area was again a hot spot of activity. Triassic Stuhini or Jurassic Hazelton Group volcanics and sediments were the focus of exploration for gold hosted in veins or shears and associated with quartz, carbonate, sulphides and chlorite.

A study jointly funded by government and industry identified the best route for a future access road to the Bronson Creek airstrip. The cost of building the all-weather industrial road is estimated to be $12.5 million and construction could start as early as spring 1990.

Gulf International Minerals Ltd. concentrated on drilling the Northwestern zone on the McLymont property (14). The mineralization is along a northeast-trending shear and replaces the limy siltstones of a Mississpian sequence of cherts and siltstones. Drilling for an extension of the Northwestern zone, as well as on two adjacent geophysical targets, expanded the potential size of the deposit.

On the Iskut joint venture project (15), drilling by Prime Resources Corporation tested a strong soil geochemical anomaly and coincident weak geophysical trends on an interpreted strike extension of the Gorge showing.

Hughes-Lang Corporation drilled 33 holes testing four sub-parallel zones on the Iskut River property (16). The northwestern portion of the property contains semimassive to massive sulphide mineralization and quartz-carbonate veins within Hazelton Group sediments. Gold values range between 2.81 grams per tonne gold over 2.7 metres, and 44.6 grams per tonne gold over 1.4 metres. A second style of mineralization, a gold-copper-molybdenum porphyry, is found in sericitized, feldspathized and biotized greywacke in the southeast corner of the claims.

Cominco Ltd. spent $2.3 million on an extensive underground drilling and drifting program on the Twin zone at the Snip site (17). The Twin zone is a shear vein averaging 4.3 metres in width cutting greywackes and siltstones. After the completion of 489 holes in 1989 the current reserves are 934 395 tonnes containing 30.0 grams per ton gold. Testing of a bulk sample indicated that average recoveries would be 90 per cent.

At Johnny Mountain (18) Skyline Gold Corporation drilled 19 holes in the Johnny Flats area and concentrated on testing three locations; the Windsock, the C-3 and the Bronson Slope anomalies. Another 109 drill holes were completed in the vicinity of the mine to better define the Pick Axe zone and increase the reserves. Prospecting discovered the Homestake vein, which trends parallel to, and is located to the north of the Discovery vein.

Two mineralized structures on the Bronson Creek property (19), the S and T zones, were drilled by Cathedral Gold Corporation. The claims, underlain by Mesozoic siltstone, sandstone and volcanics, are intruded by granitic stocks and dikes. Hole 89-9 on the S zone cut a 4.6 metre intercept grading of 15.77 grams gold per tonne. Other holes on the zone returned values between 0.79 and 33.08 grams per tonne gold over widths of 0.6 and 1.4 metres respectively.

Inel Resources Ltd. tested the AK zone on the Inel property (20). The zone is a mineralized breccia in the footwall of a porphyry dike and has a known strike length of 76 metres, a width of 6.1 metres and is open in all directions. The newly discovered Ninety-Eight zone is located 183 metres southwest of the AK zone along a porphyry dike contact and contains visible gold.

SULPHURETS AREA

The Sulphurets area became the focus of attention in mid-August when Calpine Resources Incorporated and Consolidated Stikine Silver Ltd. announced spectacular results from Hole 89-109 on the Eskay Creek property (21). Following the announcement there was a flurry of exploration activity in the area. The principal targets were gold-silver deposits found in quartz veins and siliceous breccias hosted by the volcanic and sedimentary rocks of the Jurassic Hazelton Group. Many companies keyed on the mineralized felsic volcaniclastic horizon identified by D. Alldrick and J. Britton of the British Columbia Geological Survey Branch during their 1988 mapping.

At Eskay Creek, Calpine Resources Incorporated spent $12 million on an extensive drilling program on the new 21-zone discovery. This zone has a strike length of 1300 metres, has been tested over 240 metres down dip and is open along strike and to depth. Mineralogy changes within the South, Central and North sub-zones of the 21-zone; generally base metals become more abundant and stibnite, realgar and orpiment less significant to the north. The gold mineralization is generally hosted by the transitional argillite unit, although it occurs in both the hangingwall andesite and the footwall rhyolite. To the north the mineralization is more abundant in the footwall rhyolite. Yorkton Securities Inc. estimated reserves for the South sub-zone at 2.5 million tonnes grading 7.47 grams per tonne gold and 102.48 grams silver per tonne.

On the Sib property (22) of American Fibre Corporation, the emphasis has been on defining near surface mineralization. Drilling has indicated that the gold is not in veins but associated with sulphides in a brecciated unit.

On the Sulphurets property (24), Newhawk Gold Mines Ltd. continued delineating the West and R-8 zones

Plate 4. KERR (25) - A major drill program on the Kerr porphyry copper-gold B zone, located to the right of their camp, increased ore reserves to more than 100 million tonnes.

through underground drilling and drifting. The recently discovered R-8 zone varies from 1.2 to 11.6 metres in width. It is a quartz-orthoclase vein and stockwork containing electrum and visible gold with tetrahedrite, silver sulphosalts, sphalerite and some chalcopyrite. The R-8 zone, a target of ongoing drilling, is open to depth but cut off at the top by a fault.

On the Treaty Creek claims (26) Teuton Resources Corporation was encouraged by drill results. Limited underground development was done on the Goldwedge property (23)of Catear Resources Ltd.

Copper-gold mineralization was the focus of attention on the Kerr prospect (25). Western Canadian Mining Corporation completed a drilling and geophysical program and has estimated drill-inferred reserves of 114.3 million tonnes of 0.61 per cent copper, 0.27 gram per tonne gold and 1.71 grams per tonne silver. This copper-gold porphyry deposit is open along strike and to depth. It is hosted by a sequence of sericitic and silicified felsic volcaniclastics. In October, Placer Dome Inc. acquired a controlling interest in the property by purchasing all the common shares in Sulphurets Gold Corporation from Western Canadian Mining.

STEWART MINING CAMP

Activity in the Stewart mining camp was centred around the start up of the Premier Gold mine (*see* Operating Mines, Table 1). Westmin Mines Limited continued to actively explore both the Silbak Premier (31) and Big Missouri (28) properties. At Premier underground drilling on the Power, 4G and 609 zones delineated additional reserves. On the Day zone, at Big Missouri, the drill-holes were a follow-up of significant intersections found in 1988. The drilling was to determine if the lower and middle mineralized horizons contain open-pit reserves. Westmin Mines also worked on the Myrtle and East Myrtle veins, an extension of the main Indian vein on the Indian (30) claims.

With the demise of Esso Minerals Canada, Tenajon Resources Corporation became sole owner of the Silver Butte property (29) situated slightly southwest of the Big Missouri mine site. Exploration drilling and drifting further defined the 35, West Kansas and Kansas zones.

Farther north, on the Korri-Hill property (27) a headframe and hoist have been installed in preparation for sinking a shaft to trace several veins and two zones of massive sulphide mineralization.

East of Stewart, Bond Gold Canada Inc. made significant discoveries on the Red Mountain property (32) and at Willoughby Creek (33). Both discoveries are hosted in pyroclastics and sediments of the Lower Jurassic Hazelton Group. At Red Mountain there are two intersecting, steeply dipping zones, the Marc and the Brad, which contain disseminated sulphide mineralization, mainly pyrite with some pyrrhotite and sphalerite. Drill intersections on the Marc zone varied between 1.16 grams per tonne gold over 142.5 metres and 23.35 grams per tonne gold over 16.5 metres with silver to gold ratios of 2:1 to 5:1.

South of Stewart Avatar Resources Corporation drilled on the Georgia River site (35) with the intention of extending the known reserves.

ALICE ARM AREA

Extending southward from the Stewart region into the Alice Arm area favorable Hazelton Group lithologies are again the target of exploration with the focus on gold-bearing veins and silicified zones, and conformable sulphide horizons. Immediately south of the Cambria Icefield, Noranda Exploration Company, Limited tested three zones within a large area of hydrothermally altered volcanics and sediments on the Homestake claims (34).

In the Kitsault Lake area Aber Resources Ltd. was active on the Kits property (36). A mineralized horizon with galena, sphalerite, barite and celestite is believed to be syngenetic and has been traced for over 5 kilometres.

Dolly Varden Minerals Inc. drilled on the Red Point (37) and North Star (38) properties which are located approximately 25 kilometres up the Kitsault River from the head of Alice Arm. On the Red Point three zones were drilled to confirm the grade and continuity of gold-copper mineralization. On the North Star the drilling intersected sphalerite, galena and barite mineralization with associated calcite and chert(?) which included 4.1 metres of 4.46 per cent zinc, 0.45 per cent lead, 0.1 per cent copper, 0.34 grams gold and 17.1 grams silver per tonne. The drilling confirmed the down-dip extension of the zinc-silver zone.

Northeast of Alice Arm, Great Northwest Resources Corporation completed work on three zones of the Illiance River property (39). Mineralization is disseminated or associated with quartz veinlets in altered volcanics cut by a number of parallel dikes.

Plate 5. **ALICE ARM AREA - This old steam shovel from the Dolly Varden mine is a reminder that the renewed exploration interest in the Kitsault Valley is based in part on past production.**

TERRACE AREA

Quartz veins with associated sulphides and gold, silver, copper values were the target of drill programs on the Dick/Kit (40) and Usk (51) properties as well as the underground rehabilitation on the Lucky B property (41).

NORTH COAST

There was scattered activity on the coastal islands south of Prince Rupert. On the Porcher Island property (42) of Cathedral Gold Corporation a quartz diorite intrusion is cut by mesothermal subvertical quartz veins and shears containing gold in pyrite. Sublevel drifting and raising to test the No. 4 vein for grade and structural continuity confirmed the structure previously interpreted from diamond drilling.

On the east side of Pitt Island, Fairharbour Mining Corporation drilled a polymetallic massive sulphide zone within a highly deformed volcanic-sedimentary sequence on the Trinity property (43). The mineralization is hosted by felsic schists near the contact with mafic schists.

Laredo Limestone Ltd. carried out a drilling and chip sampling program in the Laredo quarry (44) on Aristazabal Island. Proven and probable reserves of limestone are 60.7 million tonnes.

TOODOGGONE RIVER AREA

Exploration activity in the Toodoggone River area was quieter this year than for the past number of years. The majority of programs were directed toward gold-silver epithermal veins hosted by Triassic Takla Group and Early Jurassic Toodoggone volcanics (equivalent to the Hazelton Group).

In the northern part of the camp, Cyprus Gold (Canada) Ltd. carried out a program on the Moosehorn property (45). The Moosehorn East zone and coincident induced polarization and geochemical anomalies south of the Toodoggone River were both tested by drilling.

Cheni Gold Mines Inc. was active in searching for further reserves at the Lawyers mine site (46). Crosscut drifting and underground drilling defined additional reserves in a brecciated zone below the 1700 level currently being mined.

Homestake Mining Canada Ltd. conducted an extensive exploration program on the Creek, JM, O and Far East zones on the Shasta property (47). Detailed drilling increased the quantity and quality of delineated reserves on the JD and Creek zones. Sable Resources Ltd., International Shasta Resources Ltd. and International Taurus Resources Inc. mined two small open pits on the JM and Creek zones (*see* Operating Mines, Table 1).

In the Finlay River area the Grace claims (48) were percussion drilled by Skylark Resources Ltd. A number of holes were for deep overburden sampling and the remainder tested the strike extension of the Electrum zone and other newly discovered zones. The gold-silver mineralization is generally found within propyllitic and argillically altered Toodoggone volcanics.

Two companies were working on porphyry-style mineralization south of the Finlay River and to the east of Thutade Lake. Drilling on the New Kemess claims (49) of El Condor Resources Ltd. intersected wide zones of anomalous copper-gold values such as 0.15 per cent copper and 0.34 gram per tonne gold over 57 metres. On the Mess property (50) Inco Gold Company encountered weak copper, zinc, lead and silver mineralization within shallow dipping, silicified zones in altered mafic volcanics.

HAZELTON-SMITHERS AREA

The Morningstar property (52), within the Skeena river drainage west of Hazelton, was drilled by Equity Silver Mines Ltd. At the contact between a granodioritic intrusion and sedimentary rocks, a hornfelsic argillite contains small veinlets of pyrite and arsenopyrite with minor sphalerite and chalcopyrite.

Southwest of New Hazelton, Southern Gold Resources Ltd. worked on the old Rocher Déboulé mine (53), a past producer of copper, gold and silver. Southern Gold rehabilitated the 300 level on the No. 4 vein and trenched on the newly discovered 2A vein.

Noranda Exploration Company Limited explored both on the mine site at Bell (55) and approximately 25 kilometres northeast at Hearne Hill (54). Drilling at Hearne Hill concentrated on the definition of a small mineralized breccia pipe containing significant chalcopyrite mineralization. At the Bell mine site an extensive drilling program was undertaken outside the present pit boundaries with the hope of finding reserves which would extend the mine life beyond the present 1992 projection. Mineralization was encountered at depth and a follow-up program is anticipated.

The Fireweed property (56) of Canadian-United Minerals Inc. is on the south side of the Northwest Arm of Babine Lake. The silver-zinc-lead mineralization is within Cretaceous Skeena Group sandstones. Six zones are known on the property and drilling in 1989 concentrated on the Jan, the 1600 and the East zones. Drill indicated reserves on the West zone are 580 600 tonnes of 341.8 grams per tonne silver, 2.22 per cent zinc and 1.34 per cent lead.

Situated 25 kilometres east of Smithers the Dome Mountain project (57) has been beset for several years by litigation and dispute. Teeshin Resources Ltd. and Canadian-United Minerals Inc. conducted a drilling program to test three new anomalies and a mineralized outcrop area with the intent of expanding the known

reserves. The ore reserves of the Boulder and Argillite zones are in quartz-carbonate veins within a major shear.

Thirty-three kilometers west of Smithers Corona Corporation drilled a highly altered feldspar porphyry intrusion on the Louise Lake property (58). Low grade copper, gold and molybdenum values were found in the core.

HOUSTON-WHITESAIL LAKE AREA

Mount Harry Davis, several kilometres northeast of Houston, is the site of the HD claims (60) drilled by Equity Silver Mines Ltd. Zinc, lead, copper, silver and gold mineralization occur in veins associated with red and green intermediate to rhyolitic tuffs cut by small andesitic dikes.

Noramco Explorations Inc. conducted a drilling program at the Bob Creek site (61), 10 kilometres south of Houston. Located on the west edge of the Buck Creek caldera, the property is considered to have potential for a low-grade large-tonnage gold-silver-zinc-copper deposit.

At the old Silver Queen (Nadina) mine site (62), 35 kilometres south of Houston, Pacific Houston Resources Inc. completed an underground drilling and drifting program. Surface mapping, stratigraphic correlation, radiometric dating and petrographic studies were undertaken by a team of researchers from The University of British Columbia. Objectives of the 1989 program were to gain a detailed understanding of the mineralogy and to develop an ore deposit model to assist exploration for additional reserves. The deposit is an epithermal gold, silver, zinc, lead and copper vein system hosted by Tip Top Hill volcanics which are believed to belong to the Upper Cretaceous Kasalka Group.

On the Hagas property (63), on the south side of the Morice River southwest of Houston, Progold Resources tested three mineralized zones containing pyrite and associated copper, silver, lead, zinc and gold mineralization.

At the end of the year Swift Minerals Ltd. was drilling the Hill prospect (64) near Nadina Lake.

On the south side of Tahtsa Lake, on the Ox property (65), Granges Inc. completed six holes on the Damascus zone, a small mineralized shear and vein containing silver, lead and zinc.

Equity Silver Mines Ltd. conducted drill programs on the Wing (66) and Kate (67) properties located approximately 10 kilometres to the west of Troitsa Lake. Gold and silver mineralization was the target of exploration within the ash to lapilli tuffs containing thin interbedded polymictic conglomerates on the Wing and minor siltstone and andesitic dikes on the Kate.

Golden Knight Resources Inc. was successful in its bid to the British Columbia Ministry of Energy, Mines and Petroleum Resources for a lease on the Deerhorn property (68) in the Tweedsmuir Recreation Area. A $900 000 program was carried out with surface mapping and drilling together with underground rehabilitation and mapping. The drilling program tested and delineated the strike length of the three known veins carrying gold and silver.

COAL

There was only one coal exploration program in northwestern British Columbia in 1989. Crows Nest Resources Ltd. continued its drilling program on the Telkwa coal project (59). Working on the north side of the Telkwa River, the intent of the program was to confirm the structural interpretation, improve coal quality information and obtain large cores for bulk samples to test the coal washability characteristics. Resistivity surveys were useful in delineating shallow coal reserves. The bituminous coal measures in the vicinity of Pine Creek on the north side of the Telkwa River are found within Cretaceous Skeena Group sediments and are fault bounded or subcrop to the west, south and east and are truncated on the north by an intrusion.

Gulf Canada Corporation was not active in the field on the Mount Klappan anthracite coal deposit, however, feasibility and marketing studies are ongoing.

PLACER

During 1989, 85 Notices of Work were filed for placer operations in northwestern British Columbia. Of these 39 were for the Atlin area. Queenstake Resources Ltd. was active on both Spruce and Pine Creeks just east of Atlin. At the Pine Creek site (69) twenty-five men were employed processing 229 366 cubic metres of pay gravel with production estimated at 233 138 fine grams of gold. Thirty men processed 99 392 cubic metres of pay gravel producing 143 997 fine grams of gold from Spruce Creek (70).

In the Liard Mining Division 38 Notices of Work were submitted. Integrated Resources Ltd. washed 4175 cubic metres of gravel producing 3.806 grams of gold from the Barrington River (11).

DEVELOPMENT PROJECTS

With the opening of new mines in the district, the number of projects in the development stage is reduced from last year. Current projects judged to be at the development stage are listed in Table 2.

In the Cassiar mining camp a $50 million development program on the McDame asbestos deposit (8) is ahead of schedule with the start up date projected to be April 1990 at a daily production of 340 tonnes. There are now a total

TABLE 2
DEVELOPMENT STAGE PROJECTS, NORTHWESTERN DISTRICT

Project		Company	Ore Reserves
8	McDame	Cassiar Mining Corporation	16 Mt; 5.6% asbestos
17	Snip	Cominco Ltd., Prime Resources	782.4 kt; 30.4 g/t Au
23	Goldwedge	Catear Resources Ltd.	Golden Rocket Zone: 290 kt; 26.4 g/t Au; 230.7 g/t Ag
24	Sulphurets	Newhawk Gold Mines Ltd., Granduc Mines Limited	West Zone 7.7 kt; 12.14 g/t Au, 786.5 g/t Ag

of 6 kilometres of underground workings at McDame. Underground diamond drilling has increased ore reserves (*see* Table 3) and potentially extended the mine life from 10 to 13 years. Block caving methods will be used to mine the ore.

Development work slowed down on the Snip project, as Cominco focused on refining its ore reserve calculations by completing 489 underground drill holes on the Twin zone. Further improvements were made to the Bronson Creek airstrip and the camp. A feasibility study was in progress at the end of the year with the possibility of a production decision in 1990. Completion of the Iskut access road would definitely improve the economic viability of this project.

On the Sulphurets property underground development and drilling were focused on the West, UTC and newly discovered R-8 zones. A total of 79 surface and underground drill holes and 1582 metres of underground development were completed to increase the ore reserves. The first 39.6 metres of drifting on the R-8 zone on the 1200 level averaged 51.8 grams gold and 588.3 grams silver per tonne across a true width of 2.5 metres. In early 1989 Newhawk Gold Mines Ltd. submitted its Stage 1 report. A full-scale production feasibility report is scheduled for completion early in 1990.

Catear Resources Ltd. submitted a Stage 1 report in 1989 on the nearby Goldwedge property (23) and completed minor underground development on the project.

OPERATING MINES

A total of eight mines operated in the Northwestern District during 1989 (Figure 5). Collectively they employed more than 1050 workers and played a very important economic role. The base metal open-pit mines enjoyed continuing high prices for copper; however, the gold mines suffered from falling gold prices for most of the year.

Construction at the Golden Bear project (71) (*see* Plate 1) was put on hold in late 1988 pending re-evaluation, because costs were higher than originally anticipated. In particular the 150-kilometre access road cost $17 million, almost twice the original estimate. In April, Chevron Canada Resources Ltd. and Homestake Mineral Development Company decided to proceed with mine construction. Open-pit mining started in the summer with some underground mining in the fall and enough ore was stockpiled to run the plant through the winter. Utilizing the latest technology, the plant uses dry grinding, fluidized-bed roasting and carbon-in-pulp leaching to recover the gold. At the end of the year the 360 tonne per day facility was in the start-up phase.

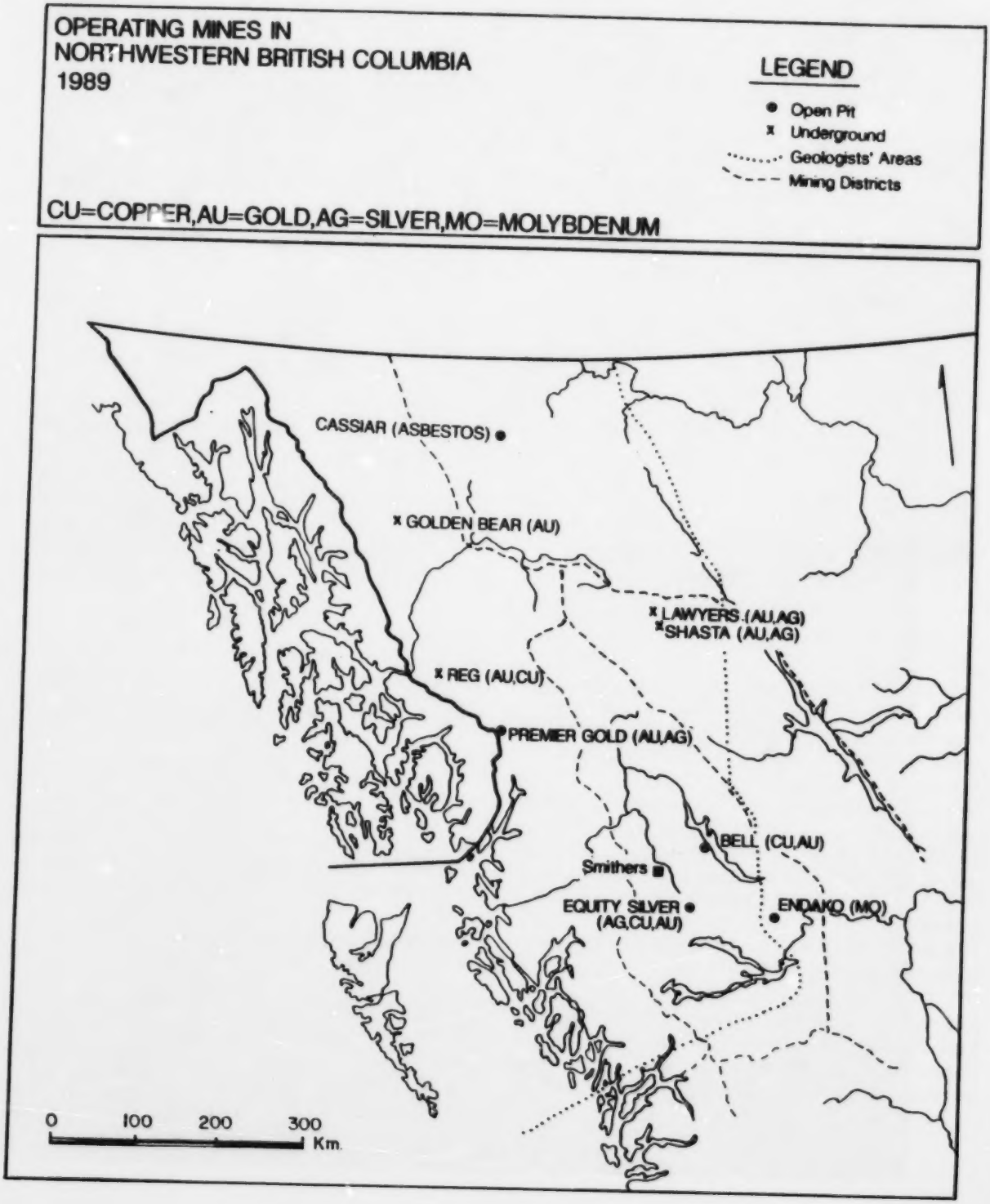
The Erickson gold mine (9) remained closed for the entire year although a very aggressive exploration program was completed. Drifting on the adit being driven to access the Michelle Zone was stopped approximately half way to its target.

At Cassiar Asbestos (72) open-pit mining continued until June 1, 1989 when the danger of a potential pit-wall failure halted the mining operation. The pit still contains approximately 54 000 tonnes of ore which may be recovered in 1990. Cassiar stockpiled 1.6 million tonnes of ore as of June, to ensure sufficient feed for the mill until the McDame deposit starts to produce.

The Johnny Mountain mine (18) completed its first full year of operation with an output of 794 690 tonnes of ore grading 18.9 grams gold per tonne. The mill was simplified with the elimination of the cyanide circuit; the gold is now being recovered by both a gravity circuit and in a copper concentrate containing byproduct silver. Current throughput in the mill is 308 tonnes per day. Most of the production has come from the No. 16 vein with the reserves now extended to the 700 level.

The Premier Gold mine opened in May, 1989. Open-pit mining of low-grade deposits on the Silbak Premier and Big Missouri properties supplied the mill with ore. The mill initially operated with 234 894 tonnes of low-grade development-ore mined in 1988 from the Dago and Silbak Premier pits. As of the end of September, 159 899 tonnes of ore and 2.57 million tonnes of waste have been mined from the Premier, Dago and S-1 pits. The first doré bar was poured in early June. The mill approached its 2000

FIGURE 5


OPERATING MINES IN
NORTHWESTERN BRITISH COLUMBIA
1989
LEGEND
Open Pit
Underground
Geologists' Areas
Mining Districts
CU=COPPER,AU=GOLD,AG=SILVER,MO=MOLYBDENUM
CASSIAR (ASBESTOS)
GOLDEN BEAR (AU)
LAWYERS (AU,AG)
SHASTA (AU,AG)
REG (AU,CU)
PREMIER GOLD (AU,AG)
BELL (CU,AU)
Smithers
EQUITY SILVER
(AG,CU,AU)
ENDAKO (MO)
0
100
200
300
Km.

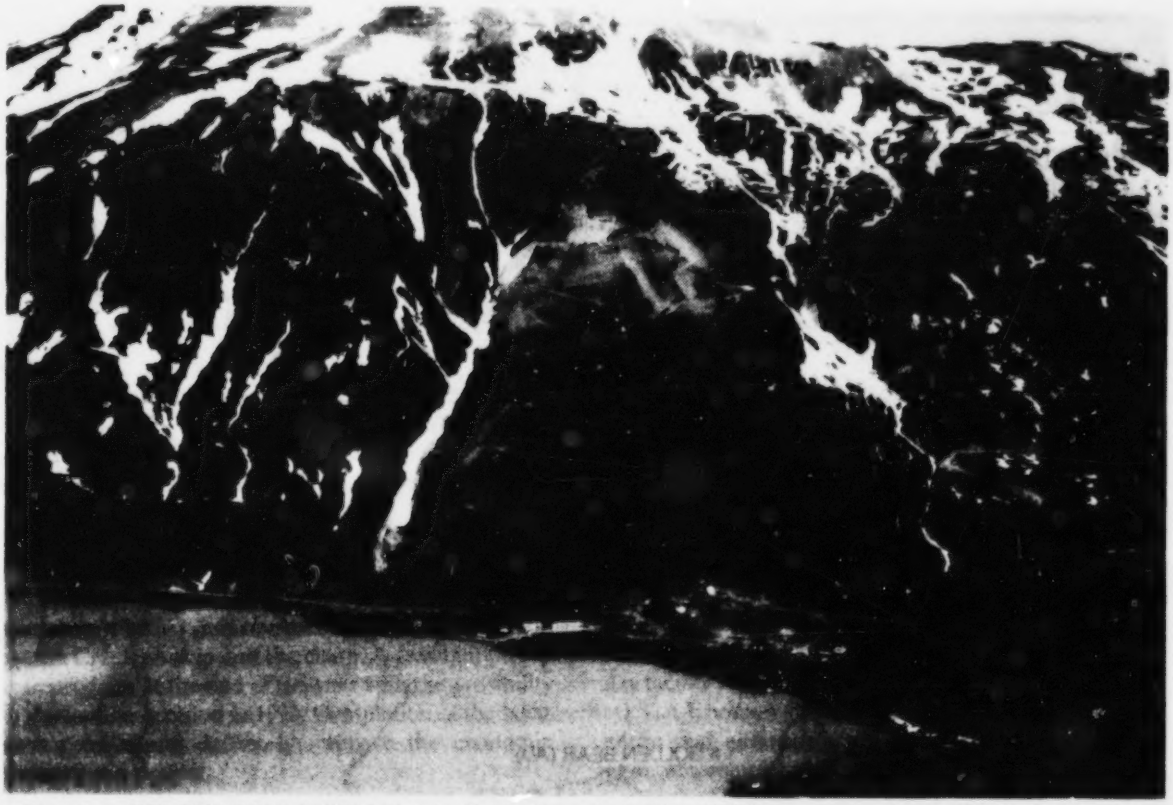


Plate 6. GOLDEN BEAR MINE (71) - The Golden Bear site in May, 1989. Note camp on shore of Muddy Lake and the road to the Bear zone portal behind it.

tonnes processed at an average grade of 2.48 grams gold per tonne.

In the Toodoggone camp the Lawyers mine (46) overcame start up problems caused by bitterly cold weather in December and January and followed by labour unrest. All production was from the AGB zone. A total of 151 590 tonnes with an average grade of 10.42 grams gold and 241.4 grams silver per tonne was milled at a rate of 460 tonnes per day. Initial development work was started on the Cliff Creek zone and late in the year Cheni Gold Mines entered into agreement with Energex Minerals Ltd. to obtain the rights to mine several deposits on the Al property.

Sable Resources Ltd. started open-pit mining in the summer on the Creek and JM zones of the Shasta property (47). There had been no previous production from this property although several companies, including Newmont Exploration of Canada Ltd., Esso Minerals Canada and Homestake Mineral Development Company have completed extensive drill programs on the claims. A total of 36 300 tonnes was mined and stockpiled. The mill at the old Baker mine has been leased from Dupont of Canada Inc. and operated at the rate of 139 tonnes per day from September 27 to December 31, 1989 for a total of 12 247 tonnes. The ore averaged 8.91 grams gold and 34 grams silver per tonne milled.

Bell mine (55) on Babine Lake maintained its production levels at approximately 15 000 tons per day with an average grade of 0.41 per cent copper and 0.240 gram gold per tonne. The current pit has an anticipated life extending to 1992; a major exploration drilling program was completed around the pit and on the property looking for new ore reserves.

Southeast of Houston the Equity Silver mine (73) started mining from the Waterline zone, although the bulk of production came from the Main zone. Production levels were similar to 1988 with a daily mill throughput of 8 500 tonnes grading 113 grams per tonne silver, 1 gram per tonne gold and 0.3 per cent copper.

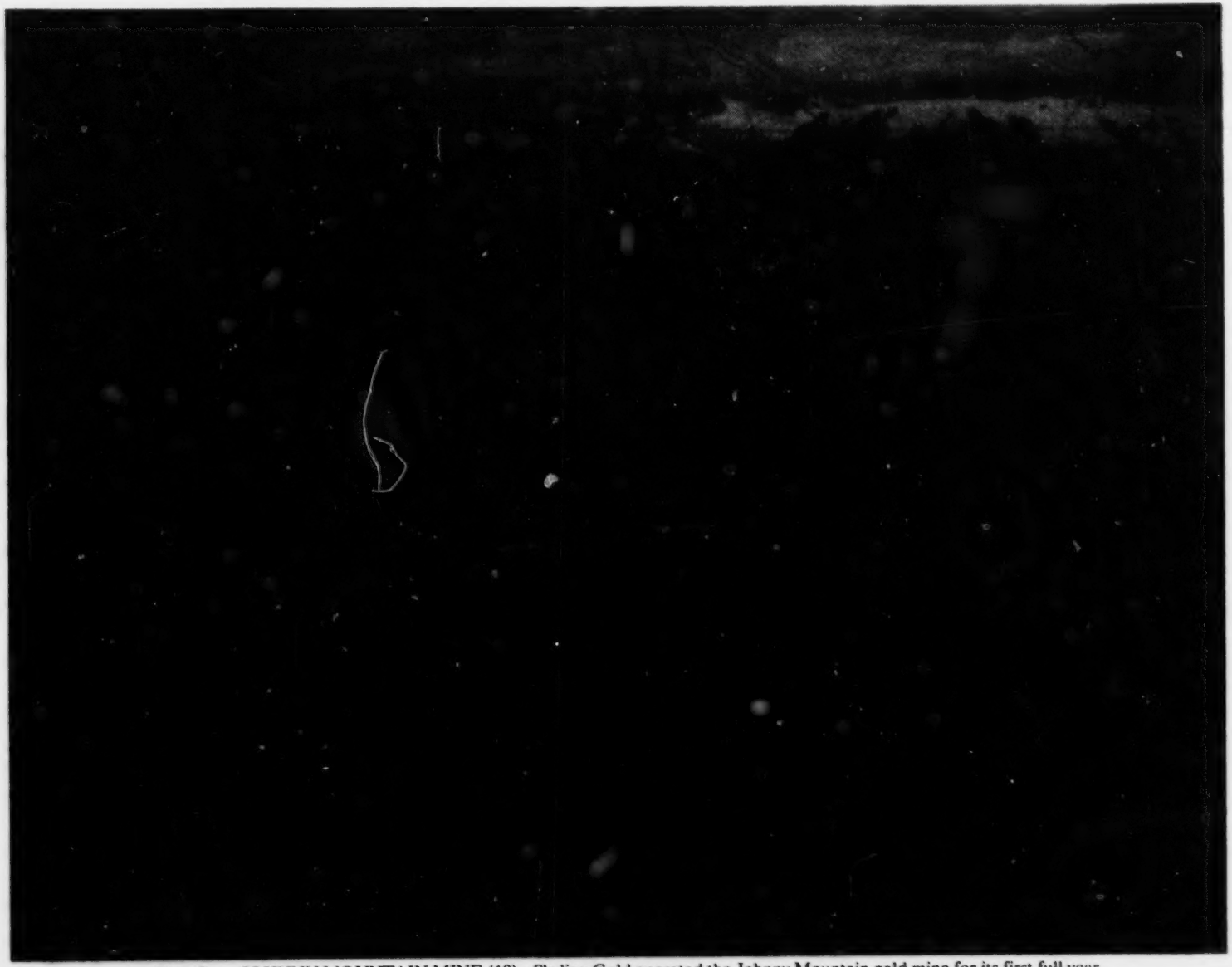


Plate 7. JOHNNY MOUNTAIN MINE (18) - Skyline Gold operated the Johnny Mountain gold mine for its first full year of operation. The mine is accessible only by air with most planes landing at the strip behind the buildings.

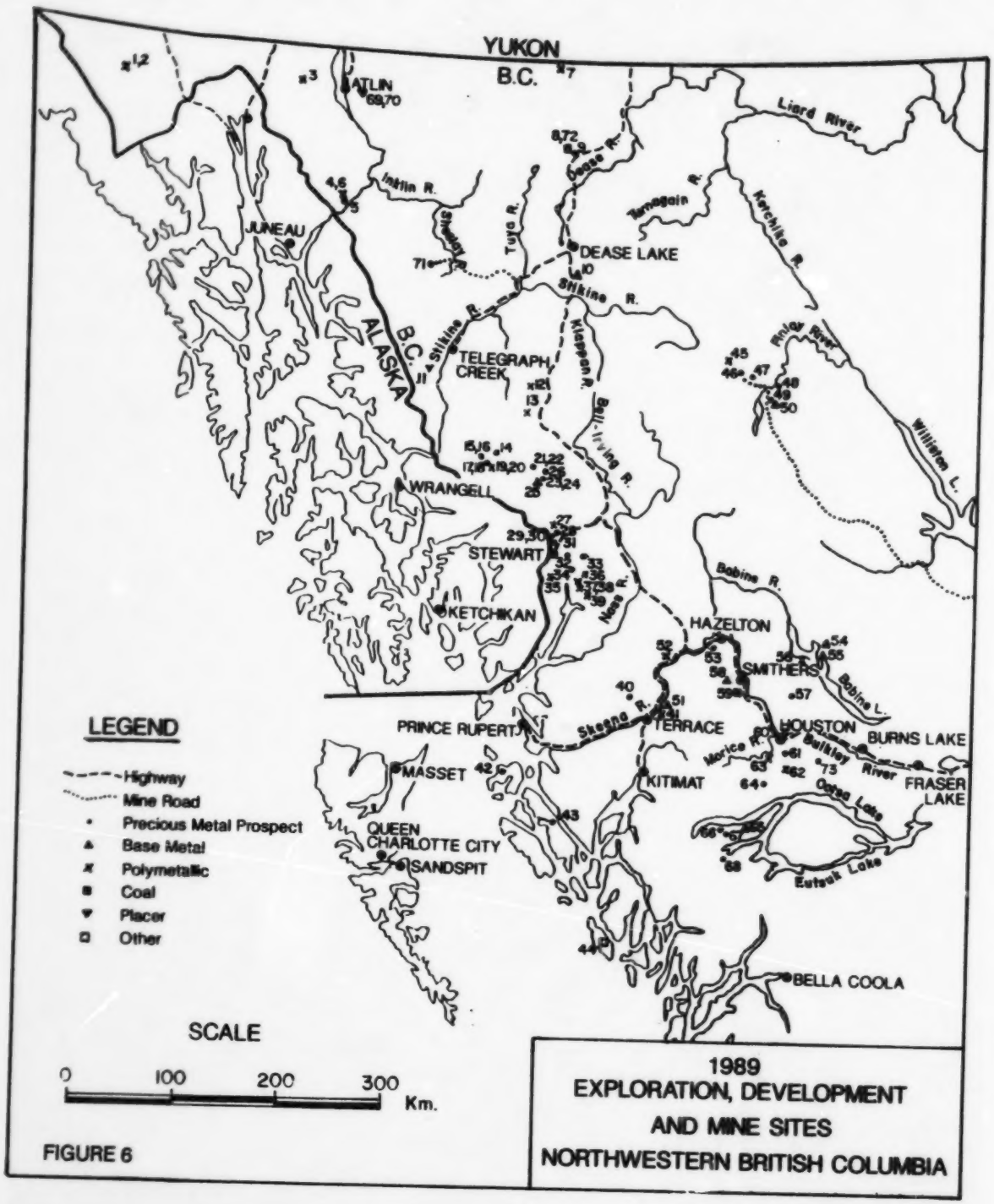

YUKON
B.C.
ATLIN
JUNEAU
ALASKA
B.C.
DEASE LAKE
TELEGRAPH CREEK
WRANGELL
STEWART
KETCHIKAN
HAZELTON
SMITHERS
TERRACE
PRINCE RUPERT
MASSET
QUEEN CHARLOTTE CITY
SANDSPIT
KITIMAT
HOUSTON
BURNS LAKE
FRASER LAKE
BELLA COOLA
Liard River
Dease R.
Tanagain R.
Kechika R.
Stikine R.
Tuya R.
Iskut R.
Klappan R.
Bell-Irving R.
Ness R.
Skeena R.
Bulkley River
Morice R.
Babine R.
Babine L.
Ootsa Lake
Eutsuk Lake
Pine River
Williston L.
LEGEND
Highway
Mine Road
Precious Metal Prospect
Base Metal
Polymetallic
Coal
Placer
Other
SCALE
0 100 200 300 Km.
1989
EXPLORATION, DEVELOPMENT
AND MINE SITES
NORTHWESTERN BRITISH COLUMBIA

FIGURE 6

TABLE 3
ACTIVE EXPLORATION PROPERTIES IN NORTHWESTERN BRITISH COLUMBIA, 1989

MAP No.	PROPERTY/ (OWNER/OPERATOR)	MINFILE No.	MINING DIVISION	NTS	COMMODITY	DEPOSIT TYPE	WORK DONE
NORTHWESTERN DISTRICT							
1	Windy Craggy (Geddes Resources)	114P 002	Atlin	114P/12E	Cu, Co, Au, Ag, Zn	Volcanogenic massive sulphide	1362 m drifting; 700 m surface ddh; 23 500 m u/g ddh; bulk sampling
2	Rime (East Arm) (Bond Gold Canada)	114P 061	Atlin	114P/12E	Au, Ag, Cu Pb, Zn, Co	Volcanogenic massive sulphide	4 ddh, 1054 m; mag; UTEM
3	Teepee (Auspex Gold/Cyprus Gold)	104M 048	Atlin	104M/10E	Au, Ag, Pb Zn,	Vein	13 ddh, 1371 m; rock and soil geochem; VLF-EM; CEM
4	Tulsequah Chief (Redfern Resources/ Cominco)	104K 002	Atlin	104K/12E	Ag, Au, Pb Zn,Cu	Volcanogenic massive sulphide	174 m drifting; 10 u/g ddh, 4880 m
5	Polaris Taku (Rembrandt Gold Mines/ Suntac Minerals)	104K 003	Atlin	104K/12E	Au, Ag, Cu Sb	Vein	20 ddh 4575 m; geochem; u/g rehabilitation
6	Banker (Silver Talon Mines/ Sunport Metals)	104K 007	Atlin	104K/12E	Ag, Au, Pb Zn, Cu	Vein	5 ddh, 915 m
7	Midway (Regional Resources/ Strathcona Mineral Services)	104O 038	Liard	104O/16W	Ag, Pb, Zn Au, Sn, Cu	Manto	pumped out old workings; rehabilitated camp facilities
8	McDame (Cassiar Mining)	104P 084	Liard	104P/05E	Asbestos	Ultramafic	drift rehabilitation; 13 u/g ddh, 2480 m
9	Erickson (Total Energold/ Erickson Gold Mining)	104P 029	Liard	104P/04E	Au	Mesothermal vein	37 ddh, 4060 m; 1375 m drifting; VLF; mag
10	Gnat Pass (June-Stikine) (Integrated Resources)	104I 001	Liard	104I/05W	Cu, Au	Porphyry	8 ddh, 915 m; trenching
11	Barrington River (W. Eberg/Integrated Resources)	104G 008	Liard	104G/12W	Au	Placer	2574 m^3 gravel moved; 5 rdh, 140 m
12	Spectrum (Calnor Resources/Cominco)	104G 036	Liard	104G/09W	Au, Ag, Cu Pb, Zn	Vein	10 ddh, 1198 m; mapping
13	Hank (Lac Minerals)	104G107	Liard	104G/01W	Au, Ag, Zn Pb, Cu	Vein	11 ddh
14	McLymont (Gulf International Minerals)	104B 281	Liard	104B/15	Au, Cu, Ag	Replacement	ddh, 7165 m; mapping; VLF; mag

15	Iskut (Golden Band Resources, American Ore/Prime Resources)	104B 356	Liard	104B/11E	Au		10 ddh
16	Iskut River (Hughes-Lang)	104B 076	Liard	104B/11	Au, Cu, Mo	Porphyry ? vein?	33 ddh, 3136 m
17	Snip (Prime Resources/Cominco)	104B 250	Liard	104B/11E	Au	Mesothermal vein	489 ddh, 29 368 m; 2200 m drifting
18	Johnny Mountain (Reg) (Skyline Explorations)	104B 107	Liard	104B/11E	Au, Ag, Cu	Mesothermal vein	128 ddh, 16 460 m, surface; VLF; mag; EM; mapping; drift decline to 1035 m
19	Bronson Creek (Ecstall Mining/Cathedral Gold)	104B 131	Liard	104B/10W	Au, Ag, Pb Zn, Cu	Vein	26 ddh, 3245 m; soil geochem; UTEM; airborne mag, EM
20	Inel (Inel Resources)	104B 113	Liard	104B/10W	Au, Ag, Cu Pb, Zn	Vein	ddh, 7112 m surface; 1487 m u/g; 131 m drifting; VLF; mag; UTEM; mapping
21	Eskay Creek (Calpine Resources Cons., Stikine Silver/Prime Explorations)	104B 008	Skeena	104B/09W	Au, Ag	Epithermal? massive sulphide	180 ddh, 11 278 m; mapping; VLF; IP; mag; airborne geophysics; soil geochem
22	Sib (American Fibre)		Skeena	104B/09W	Au, Ag, Pb Zn, Cu	Epithermal vein	13 ddh, 1830 m; geochem; IP; airborne geophysics
23	Goldwedge (Catear Resources)	104B 105	Skeena	104B/08E	Ag, Au	Vein	27 m drifting
24	Sulphurets (Granduc Mines/ Newhawk Gold Mines)	104B 193	Skeena	104B/08E	Ag, Au	Vein	79 ddh, 4094 m surface; 10 090 m u/g; 287 m drifting; 1061 m decline; 234 m raising; surface mapping; 408 m rocksaw trenching
25	Kerr (Placer Dome acquisition from/ Western Canadian Mining)	104B 191	Skeena	104B/08	Cu, Au	Porphyry	20 ddh, 4365 m; IP; mapping
26	Treaty Creek (Teuton Resources/ Orequest Consultants)	104B 078	Skeena	104B/09	Au, Ag	Vein	11 ddh, 1183 m; airborne mag, EM; silt, soil, rock; geochem
27	Korri-Hill (Hi Ho) (J.B. Hill)	104B 140	Skeena	104B/01E	Ag, Pb,Au Cu, Zn	Vein	Headframe and hoist installed
28	Big Missouri (Premier Gold Joint Venture/ Westmin Mines)	104B 046	Skeena	104B/01	Ag, Au	Vein	15 ddh, 1758 m
29	Silver Butte (Tenajon Resources)	104B 150	Skeena	104B/01	Ag, Au	Vein	13 ddh, 1329 m u/g; 90 m drifting; 15 ddh, 2827 msurface; soil geochem; trenching; mapping
30	Indian (Caltech Data/Westmin Mines)	104B 031	Skeena	104B/01	Ag, Au, Pb Zn	Vein	17 ddh, 1593 m
31	Silbak Premier (Premier Gold Joint Venture/Westmin Mines	104B 054	Skeena	104B/01E	Ag, Au, Pb Zn, Cu	Vein	44 ddh, 3390 m

32	Red Mountain (Bond Gold Canada)		Skeena	103P/14W	Au, Ag		27 ddh, 4730 m; mapping; trenching; airborne geophysics
33	Willoughby Creek (Bond Gold Canada)		Skeena	103P/14E	Au, Ag		14 ddh, 1709 m; airborne geophysics
34	Homestake (Caulfield Resources, On Wah Resources, NDU Resources/ Noranda Exploration)	103P 216	Skeena	103P/13E	Au, Ag, Cu	Vein	2 ddh, 1450 m; rock and soil geochem; mag; IP
35	Georgia River (Cannon Resources/Avatar Resources)	103O 013	Skeena	103O/16W	Au, Ag, Pb Zn, Cu	Vein	8 ddh, 1525 m
36	Kits (Oliver Gold, Aber Resources/ Keewatin Engineering)	103P 245	Skeena	103P/14W	Ag, Pb, Zn Zn, Cu	Stratiform? massive sulphide,	5 ddh, 1000 m; silt, soil, rock geochem
37	Red Point (Dolly Varden Minerals)	103P 196	Skeena	103P/12E	Ag, Au, Cu Pb, Zn		25 ddh, 2260 m; soil geochem; mapping; trenching
38	North Star (Dolly Varden Minerals)	103P 189	Skeena	103P/12W	Ag, Au, Cu Pb, Zn	Massive sulphide	6 ddh, 2400 m; mapping
39	Iliance River (Monarch) (Great Northwest Resources)	103P 015	Skeena	103P/11E	Ag, Cu, Pb	Vein Zn	7 ddh, 685 m
40	Dick, Kit (Longreach Resources/ J. Paul Stevenson)	103I 215	Skeena	103I/14E	Au, Ag, Cu	Vein	3 ddh, 200 m
41	Lucky B (C. Watson)	103I 136	Skeena	103I/09W	Au, Ag, Cu W, Pb, Zn	Vein	46 m u/g rehabilitation; soil geochem
42	Porcher Island (Cathedral Gold)	103J 017	Skeena	103J/02E	Au, Ag, Cu	Vein	110 m raising; 100 m sub level drifting
43	Trinity-Gren (Fair Harbour Mining)	103H 066	Skeena	103H/12W	Cu, Zn, Pb Ag, Au	Massive sulphide	6 ddh, 450 m
44	Laredo Limestone	103A 001	Skeena	103A/11E	Limestone		11 ddh, 305 m; chip sampling
45	Moosehorn (Cassidy Resources, Imperial Metals/Cyprus Gold)	094E 086	Omineca	094E/06E	Ag, Au, Pb Zn, Ba	Epithermal	6 ddh, 745 m; mag
46	Lawyers (Cheni) (Cheni Gold Mines)	094E 066	Omineca	094E/06E	Ag, Au	Epithermal	100 m drifting; 915 m u/g drilling
47	Shasta (Homestake Mining (Canada)/ International Shasta Resources)	094E 050	Omineca	094E/02	Au, Ag	Epithermal	64 ddh, 5985 m; trenching
48	Grace (Asitka Resources/ Skylark Resources)		Omineca	094E/02	Au, Ag	Epithermal	92 pdh, 1975 m; geochem; prospecting
49	New Kemess (El Condor Resources/ D. Copeland)		Omineca	094E/02	Au, Cu	Porphyry	5 ddh, 782 m; IP; mag; VLF-EM; trenching; soil geochem; mapping
50	Mess (Western Premium Resources/Inco)		Omineca	094E/02E	Ag, Pb, Cu		7 ddh, 366 m
51	Usk (W.H. McRae, F. Loutitt/Falcon Drilling)	103I 183	Omineca	103I/09W	Cu		drilled

52	Morningstar (C. Carlson, J. Leblanc/ Equity Silver Mines)	103P 034	Omineca	103P/01E	Au, Ag, Pb Zn, As	Vein	4 ddh, 543 m
53	Rocher Déboulé (Canamin Resources/Southern Gold Resources)	093M 071	Omineca	093M/04E	Cu, Au, Ag	Vein	u/g rehabilitation; trenching
54	Hearne Hill (D. Chapman, P. Bland/ Noranda Exploration)		Omineca	093M/01E	Cu	Porphyry	6 ddh, 500 m; trenching; road; geochem
55	Bell mine (Noranda Minerals)	093M 001	Omineca	093M/01E	Cu, Au, Ag	Porphyry	ddh, 16460 m
56	Fireweed (Canadian-United Minerals)	093M 151	Omineca	093M/01W	Ag, Pb, Zn	Replacement? conformable mass. sulphide?	28 ddh, 5486 m; IP
57	Dome Mountain (Canadian-United Minerals/ Teeshin Resources)	093L 022	Omineca	093L/10, 15E	Au, Ag, Pb Zn	Vein	20 ddh; trenching; IP
58	Louise Lake (L. Warren, E. Shaede/Corona)	093L 079	Omineca	093L/13E	Cu, Mo, Au	Porphyry	5 ddh, 916 m
59	Telkwa Coal (Shell Canada/Crows Nest Resources)	093L 152	Omineca	093L/11E	coal		18 rcd, 1486 m; 13 ddh, 1020 m; 4 (15 cm) ddh 262 m; resistivity
60	HD (J. Moll, D. & G. Merkley/ Equity Silver Mines)	093L 203	Omineca	093L/07E	Zn, Pb, Cu Ag, Au	Vein	6 ddh, 776 m
61	Bob Creek (Royal Star Resources/ Noramco Explorations)	093L 009	Omineca	093L/07	Au, Ag, Zn	Transitional	8 ddh, 1981 m; IP; mapping
62	Silver Queen (Pacific Houston Resources)	093L 002	Omineca	093L/02	Ag, Au, Pb Zn, Ga, Ge	Vein	945 m u/g ddh; 107 m drifting; surface mapping
63	Hagas (Progold Resources)	093L 221	Omineca	093L/03E	Cu, Ag, Pb Zn		4 ddh, 950 m
64	Hill (Swift Minerals)		Omineca	093E/14	Cu, Au Porphyry		drilling in progress
65	Ox (International Damascus/Granges)	093E 101	Omineca	093/11E	Ag, Pb, Zn	Shear, vein	8 ddh, 750 m
66	Wing (Equity Silver Mines)		Omineca	093E/11	Ag, Au		6 ddh, 485 m
67	Kate (Equity Silver Mines)		Omineca	093E/11	Ag, Au		4 ddh, 458 m
68	Deerhorn (Lindquist Lake) (Golden Knight Resources/ Teck Explorations)	093E 020	Omineca	093E/06W	Au, Ag, Cu W	Vein	2253 m surface ddh; u/g rehabilitation mapping; geochem; mag

TABLE 4
OPERATING MINES IN NORTHWESTERN BRITISH COLUMBIA, 1989

MAP No. *Fig. 1*	MINE	OWNER	MINING DIVISION	TONNES MILLED (000's)	RATED CAPACITY (TPD)	% ANNUAL RATED CAPACITY	DEPOSIT TYPE	RESERVES/PRODUCTION
NORTHWESTERN DISTRICT								
11	Barrington River	Integrated Resources Ltd.	Liard				Placer Au	2574 m^3 mined; 3806 g Au recovered
18	Johnny Mountain (Reg)	Skyline Gold Corp.	Liard	90.93 (Jan/Oct)	270	99	Mesothermal Au-Ag-Cu Vein	Production: 1598 kg Au, 2686 kg Ag, 544 t Cu (Jan/Oct)
27	Silbak Premier/Big Missouri	Westmin Mines Limited	Skeena	303.55	2000	96	Ag-Au Vein	Production: 359 kg Au, 5286 kg Ag (Jun/Oct)
46	Lawyers	Cheni Gold Mines Inc.	Omineca	151.59	500	92	Epithermal Au-Ag	Production: 1567 kg Au, 32044 kg Ag
47	Shasta	Sable Resources Ltd.	Omineca	12.25 (Oct/Dec)	180	77	Epithermal Ag-Au	Production: 30.9 kg Au, 2145 kg Ag
55	Bell	Noranda Minerals Inc.	Omineca	5500	15 400	98	Porphyry Cu-Au	Production: 18.5 kt Cu, 860 kg Au, 3149 kg Ag
69	Pine Creek	Queenstake Resources Ltd.	Atlin				Placer Au	764 554 m^3 mined; 233.1 kg fine Au recovered
70	Spruce Creek	Queenstake Resources Ltd.	Atlin				Placer Au	382 277 m^3 mined; 144.0 kg fine Au recovered
71	Golden Bear	Golden Bear Operating Co.	Atlin	1.62	360	Start-up	Replacement Au	41.19 kt mined open-pit; 3.86 kt mined u/g
72	Cassiar	Cassiar Mining Corp.	Liard	1165	3600	89	Asbestos	1.6 Mt stockpiled June '89
73	Equity Silver	Equity Silver Mines Ltd.	Omineca	3100	8500	100	Transitional Ag-Au-Cu	Production: 220 000 kg Ag, 1800 kg Au, 6300 t Cu

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